

HG22P

pluscom⁺

Operating instructions

Types:

HG22P/125-4
HG22P/125-4S
HG22P/160-4
HG22P/160-4S
HG22P/190-4
HG22P/190-4S

D

GB

F

E

I

Foreword

Dear Customer,

Bock compressors are top-quality, reliable, service-friendly quality products. Please comply with the following operating and maintenance instructions so that you can benefit from all advantages to the full and use your refrigerating system throughout its entire service life. If you have any questions about installation, operation and accessories, please contact our technical service or your refrigerating system wholesale dealer or our representative. The Bock service team is available by phone under **+49 7022 9454-0**, by e-mail under **mail@bock.de** or on the internet under **www.bock.de**. In addition, for German speaking countries we have set up a toll-free hotline under **00 800 / 800 000 88** from Monday to Saturday between 8 a.m. and 9 p.m. Any suggestions you may have regarding the on-going development of our compressor, equipment and parts programme are welcome at any time.

Please read the information summarised for you in this manual before starting work.

It contains important instructions for safety, installation, initial commissioning and handling. In addition you will find information on maintenance, spare parts and accessories.

Some instructions are identified by special symbols with the following meaning:



WARNING! This symbol is used to indicate that inaccurate compliance or total failure to comply with the instructions could cause injury to persons or damage to the compressor or refrigerating machine.



DANGER! This symbol refers to instructions for avoiding direct dangers to persons.



DANGER! This symbol refers to instruction for avoiding direct dangers to persons or plant by electrical current.



This symbol indicates important additional instructions which you should observe during your work.

The high quality standard of Bock compressors is guaranteed also by on-going further development of machine, features and accessories. This could possibly result in non-conformities between this present manual and your compressor. Please understand that it is not possible for any claims to be derived from the details, illustrations and descriptions.

Your team at
Bock Kältemaschinen GmbH

- Subject to modification -

Contents

	Page
Safety instructions	4
Product description	5
Use as intended	
Short description	
Main and functional parts	
Name plate	
Type code	
Areas of application	7
Coolant	
Oil filling	
Limits of application diagrams	
Installation	9
Setting up	
Pipe connections	
Pipes	
Shut-off valves	
Electrical systems	12
Electrical connection	
Connection of the driving motor	
Wiring diagram for direct start 230 V Δ / 400 V Y	
Electronic trigger MP 10	
Connection of the electronic trigger MP 10	
Functional test of the electronic trigger MP 10	
Recommendation for contactor selection	
Start-up	16
Preparations for start-up	
Pressure strength test	
Tightness test	
Evacuation	
Filling with coolant	
Start-up	
Liquid sluggings	
Connection of the oil level regulator	
Maintenance	18
Safety instructions	
Spare part recommendation	
Accessories	
Screwed unions	
Lubricants	
Decommissioning	
Technical data	20
Dimensions and connections	21
Conformity and manufacturer's declaration	22

Safety instructions



The Bock refrigerating compressors named in the title are intended for installation in machines (within the EU according to EU directive 98/37/EC Machinery Directive, 97/23/EC Pressure Equipment Directive and 73/23/EC Low Voltage Directive). Initial commissioning is only allowed when the compressor has been installed according to these instructions and the whole machine in which it is integrated has been tested and accepted according to the statutory regulations.

Bock refrigerating compressors have been designed to state-of-the-art engineering. Safety for the user is given particular priority during the design stage. However, it is always possible for the refrigerating machine and operation thereof to pose unavoidable residual risks. **This is why these instructions must be observed carefully by every person working at the compressor.**

Work on the compressor may only be carried out by persons whose technical training, skills and experience together with their knowledge of pertinent regulations and documentation means that they are capable of assessing the work to be carried out and detecting any possible dangers.



Safety instructions

- Any handling of the compressor is permissible only by skilled personnel!
- Observe national safety regulations, accident prevention regulations, generally recognized technical rules as well as specific regulations (EN 378, EN 60204, EN 60335 etc.).
- Carry compressors only with hoists with sufficient lifting power.
- Operate compressors only in refrigeration plants with approved refrigerants.
- Do not exceed permissible operating pressure – even for testing purposes.
- Caution! Compressors are filled with protective gas ex works (approx. 3 bar nitrogen). Avoid possible injuries to skin and eyes! Wear goggles! Relieve pressure of compressors before connection to the refrigeration system!
- Before start-up check compressor for transport damage.
- Before start-up check that all components mounted by the user are installed correctly and connected pressure-tight with the compressor (pipes, plugs, union nuts, replaced components etc.).
- Before start-up evacuate the refrigeration plant with compressor carefully and then charge with refrigerant.
- Open discharge and suction shutoff valves before starting the compressor.
- Do not start the compressor in vacuum! Operate only with refrigerants charge.
- Corresponding to the conditions of use, surface temperatures of more than 100 °C on the discharge side and below 0 °C on the suction side can be reached.

Product description

Use as intended

This operating manual describes the compressor named in the title in the standard version. Bock refrigerant compressors are intended for use in refrigeration plants using the refrigerants stated below and under compliance with operating limits. Any other use of the compressor is not permitted!

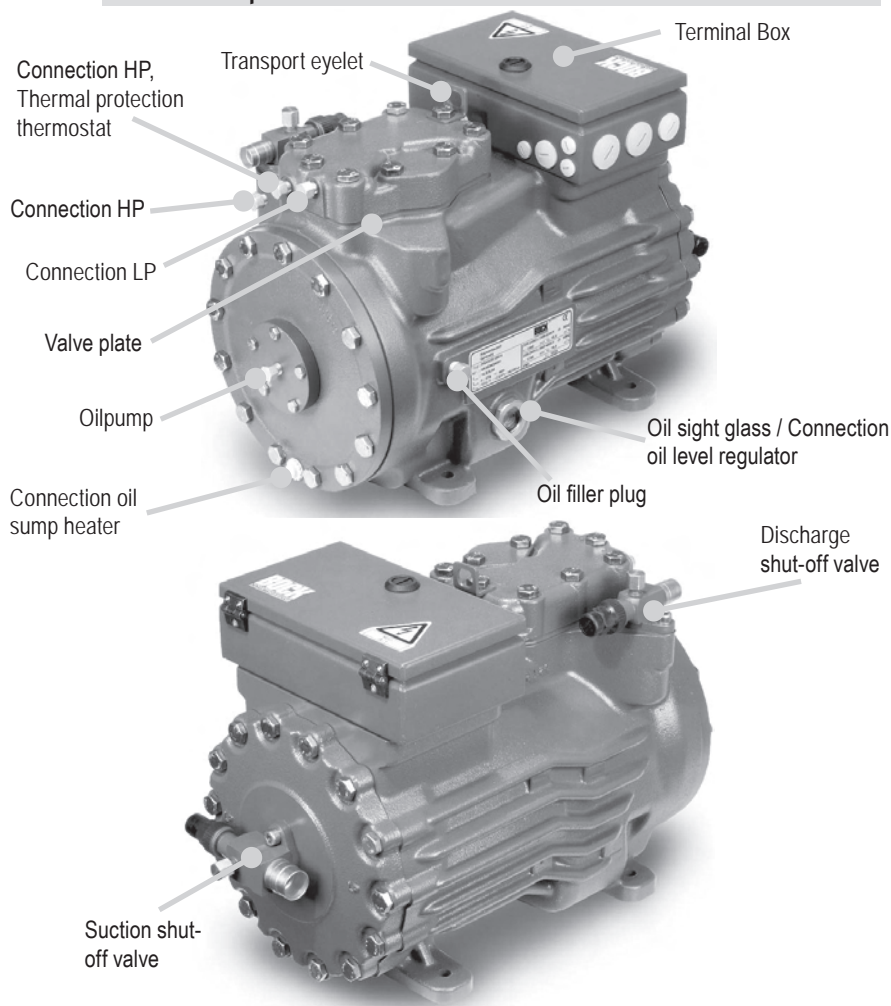


Do not use in explosion-risk environments!

Short description

- Half-hermetic two-cylinder reciprocating compressor with oil pump lubrication.
- Suction gas cooled drive motor.
- Compact dimensions, quiet running, high efficiency.

Main function parts



GB

Product description

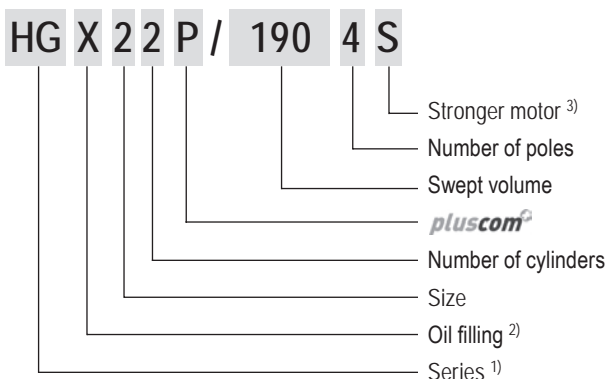
Name plate (example)

D - 72636 Frickenhausen Made in Germany		BOCK ® COMPRESSORS		CE	
1	Typ : HG22P/190-4	6	220-240VΔ/380-420VY -3-	50HZ	6
2	Nr. : AK35830A001	7	n : 1450 min ⁻¹	V _{th} : 16,5 m ³ /h	8
3	I _{max} : 13,3/7,7A	8	265-290VΔ/440-480VY -3-	60HZ	9
4	I _{block} Δ: 53A Y: 32A	9	n : 1740 min ⁻¹	V _{th} : 19,8 m ³ /h	10
5	p _{max} : ND(LP) / HD(HP)=19/28 bar	10	IP65	Öl: SP46	11
		11			12
		12			13

- 1 Type designation
 - 2 Machine number
 - 3 Maximum operating current
 - 4 Start-up current (rotor blocked)
 - 5 ND (LP): max. admissible stop period pressure intake side
HD (HP): max. admissible working pressure high pressure side
- ❗ note limits of application diagrams!

- 6 Voltage, switching, frequency
 - 7 Rated speed
 - 8 Swept volume
 - 9 Voltage, switching, frequency
 - 10 Rated speed
 - 11 Swept volume
 - 12 Oil grade filled by the manufacturer
 - 13 Protection terminal box
- ❗ Electrical accessories can change the IP safety class system!

Type code (example)



¹⁾ HG = Hermetic-Gas-cooled (suction gas cooled) for the normal- / air conditioning applications.

²⁾ X = Ester oil filling (HFC refrigerant), e.g. R134a, R404A, R507, R407C.

³⁾ S = Stronger motor e.g. air conditioning applications

Areas of application

Coolant

- (H)FCKW / (H)CFC: R22
- HFKW / HFC: R134a, R404A/R507, R407C

Oil filling

- The compressors are filled with the following oil grades in the factory:
for R22: FUCHS Reniso SP 46;
for R134a, R404A, R407C, R507: FUCHS Reniso Triton SE 55.
Compressors with ester oil filling (FUCHS Reniso Triton SE 55) are marked with an X in the type designation (e.g. HGX22P/ 190-4)

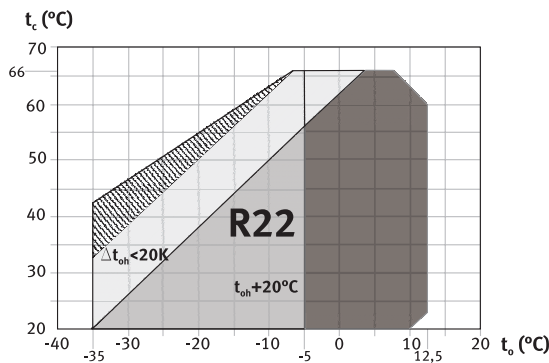
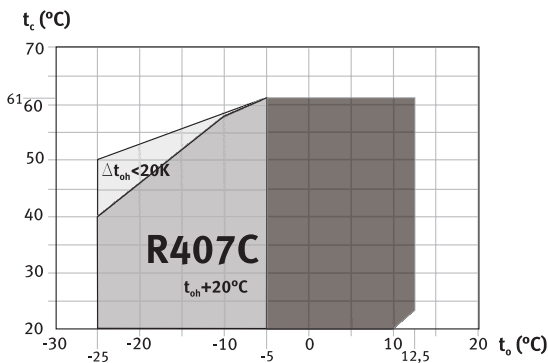
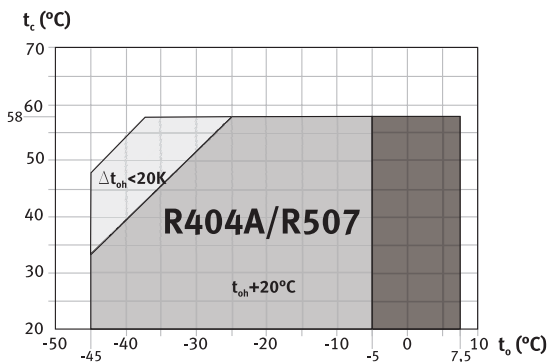
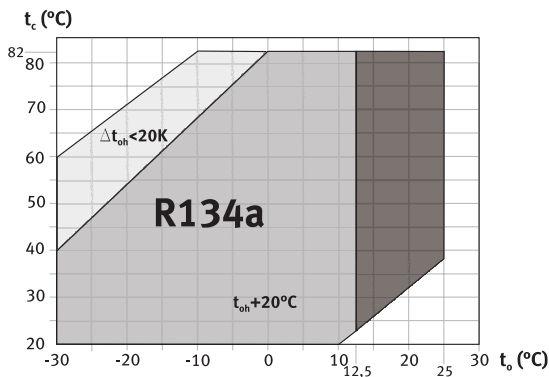


- **We recommended using the above oil grades for refilling. Alternatives: see excerpt the Bock lubricant table page 19.**





Limits of application diagrams



- **It is possible to operate the compressor within the operating limits shown in the diagrams. Please note the significance of the shaded areas. Thresholds should not be selected as design or continuous operating points.**
 - **Max. permissible end temperature of the compressor: 140°C**
 - **Max. permissible switching frequency: 8x /h**
 - A minimum running time of 3 min. steady-state condition (continuous operation) must be achieved.
- **For operation with additional cooling:**
 - Use only oils that are highly thermally stable
 - Avoid continuous operation near the limits
- **For operation with frequency converter**
 - Achieving the max. permissible power consumption of the drive motor can restrict the operating limits.
- **During operation in the vacuum range, there is a danger of air entering on the suction side. This can cause chemical reactions, pressure rise in the condenser and an excessive compressed-gas temperature. Avoid absolutely any entry of air.**



Maximum allowed operating pressure (HP): 28 bar

-  Unrestricted area of application
-  Additional cooling or reduced suction gas temperature
-  Additional cooling and reduced suction gas temperature
-  Motor variant - S (stronger motor)

t_o evaporation temperature ($^{\circ}C$)

t_c condensing temperature ($^{\circ}C$)

Δt_{oh} suction gas overheating (K)

t_{oh} suction gas temperature ($^{\circ}C$)

Design for other areas on request

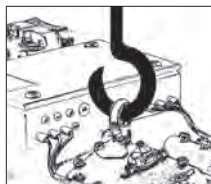
Installation



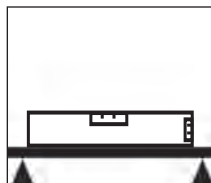
Compressors are filled with protective gas ex works (approx. 3 bar nitrogen!)

- Leave protective gas filling in the compressor up to evacuation.
- Do not open shutoff valves up to evacuation.
- Absolutely avoid entry of air!

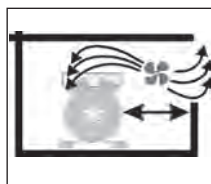
Erection



- Use transport eyelet.
- Do not lift manually.
- Use lifting gear.



- Erect on a flat surface or frame with sufficient load-bearing ability. Only erect on a slant in consultation with the manufacturer
- Single compressor preferably on vibration damper.
- Duplex and compound connection basically rigid.



- Ensure there is sufficient space for maintenance work.
- Ensure there is sufficient ventilation in the machine room.



- Do not operate in a corrosive atmosphere, dust, vapour or flammable environment.

Pipe connections

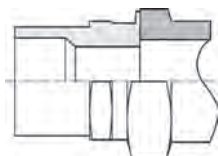


Fig.: schematic

- The **pressure and suction shutoff valves** have graduated inside diameters, so that pipes in the customary millimeter and inch dimensions can be used. The pipe will be immersed more or less deeply according to dimension.



The connection diameters of the shutoff valves are designed for the maximum compressor output. The actually required pipe cross-section must be adapted to the actually refrigeration capacity. The same applies for non-return valves.

Installation

Caution when soldering!

- Remove screw connections from the valve for soldering.
- Do not overheat the valve.
- Cool the valve body during and after soldering.

Pipes

- Pipes and system components must be clean and dry inside and free of scales, metal chippings, and coats of rust and phosphate. Only use hermetically sealed parts.
- Lay pipes correctly. Avoid strong vibrations because of the risk of cracks and breaks. Provide suitable fixed points and/or vibration compensators as required.
- Guarantee a correct oil return.
- Keep pressure losses to an absolute minimum.



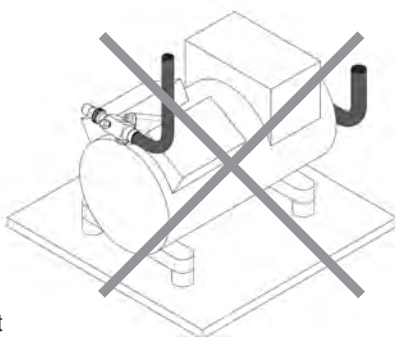
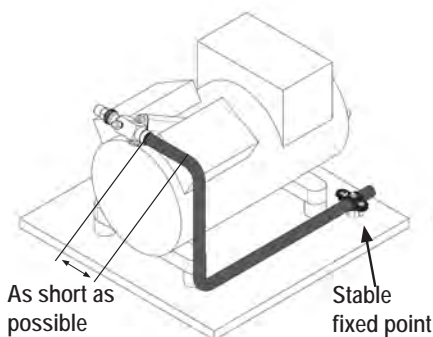
A proper run of the suction and discharge line immediately after the compressor is of great importance for the system's smooth running and freedom from vibration.



Improperly installed pipes can cause cracks and tears, which results in refrigerant loss.

A rule of thumb:

Always lay the first pipe section starting from the compressor downward and parallel to the drive shaft.



Installation

Shut- off valves



Comply with the safety instructions on page 9!

Before opening or closing the shut-off valve, turn the valve spindle seal approx. $\frac{1}{4}$ of a turn counter-clockwise. After activating the shut-off valve, tighten the valve spindle seal again clockwise.

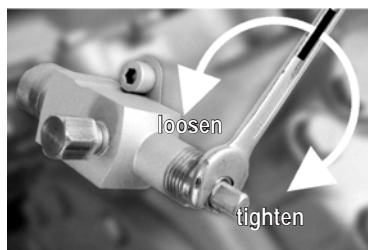
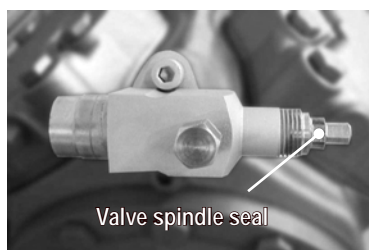
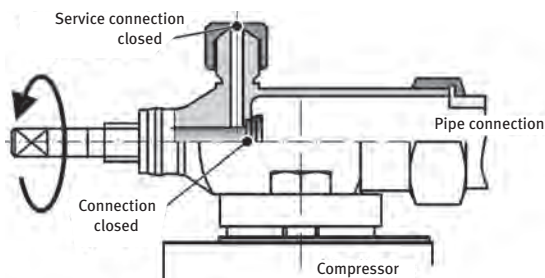


Fig.: schematic

Mode of operation of the screw-down service connections

Opening the shutoff valve:

Turn the spindle to the left (counterclockwise) up to the stop. Shutoff valve fully opened, service connection closed.



Opening the service connection:

Turn spindle $\frac{1}{2}$ – 1 turn to the right. Service connection opened, shutoff valve opened.

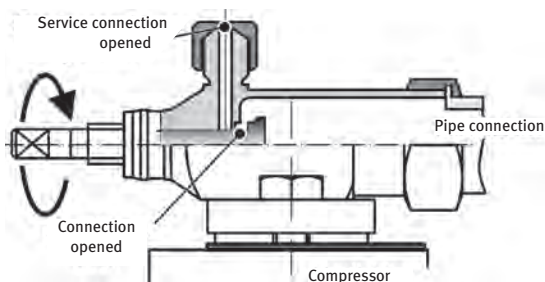


Fig.: schematic

GB

Electrical system

Electrical connection



High voltage! Perform work only with the electrical installation disconnected from the power supply!



- Make connection of the compressor motor according to the circuit diagram (see inside of terminal box). Comply with local safety regulations for electrical work and the safety standards EN 60204, EN 60335 when connecting.
- For cable lead-through at the terminal box use suitable cable screw connections in correct protective version (see name plate). Use strain relief. Avoid abrasion points on cables.
- Motor contactors, feed lines and fuses are to be rated according to the maximum operating current (see compressor nameplate).
- Compare the details for voltage and frequency on the nameplate with the details for the electricity mains supply. **The motor may only be connected up when these details correspond.**

Connection of the driving motor



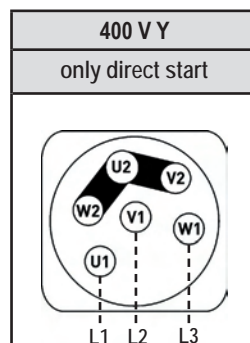
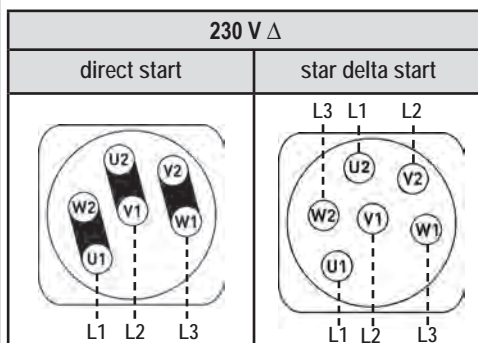
The compressor is implemented with an engine for star-delta connection.

Recognition characteristics:

Designation on the nameplate	Designation on the yellow label on the terminal box
Δ / Y	

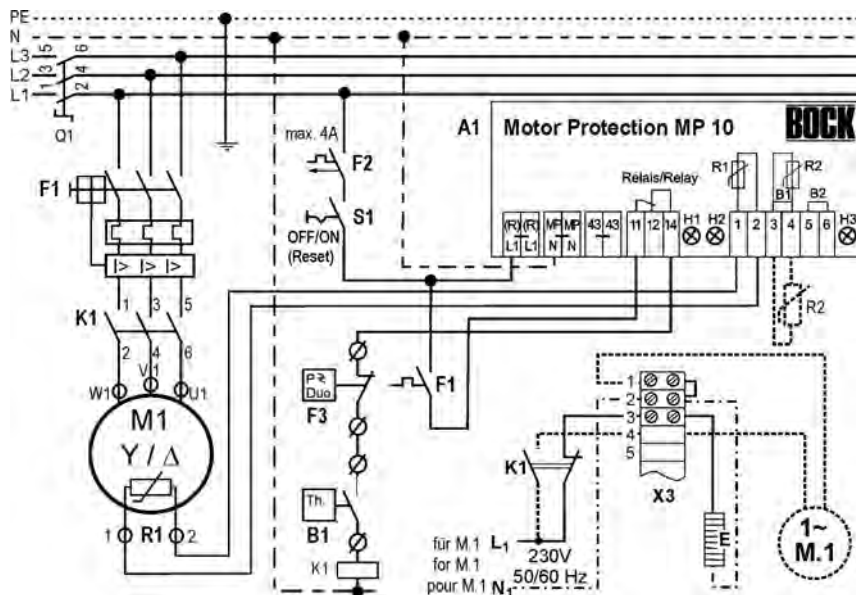
star-delta starting is only possible in Δ - voltage-range.

Example:



Electrical system

Wiring diagram for direct start 230 V Δ / 400 V Y



- 1-2 Connections for PTC sensor
- R1 PTC sensor motor winding
- R2 Heat protection thermostat (PTC sensor)
- F1 Safety device load stabilisation circuit
- F2 Fuse control power circuit
- F3 Safety chain (high/low pressure monitoring)
- B1 Enable switch (thermostat)
- Q1 Main switch
- S1 Switch control voltage
- M1 Compressor motor
- M.1 Fan HA (only HA 22 P)
- K1 Mains contactor
- A1 Electronic trigger MP10
- E Oil sump heater
- X3 Terminal strip in the terminal box

Starting relief

To avoid current peaks during the starting phase we recommend using the **Bock-ESS** soft starting device (Electronic Soft Start). Refer to "Accessories" for further information.

GB

Electrical system

Electronic trigger MP 10

The compressor motor is equipped with posistor temperature sensors (PTC) which are wired to the electronic trigger MP 10 in the terminal box. The stand-by mode is indicated by the light diode H3 (green) when mains voltage is applied. In the event of overtemperature in the motor winding, the device switches the compressor off and signal lamp H1 lights up red.

In addition, the hot gas side of the compressor can be protected from overheating by a heat protection thermostat (accessories). The signal lamp H2 (red) is intended for this function.



When the device has triggered, this indicates an overload or intolerable operating conditions. Ascertain and eliminate the cause.



The device has a reclosure preventing feature. After eliminating the fault, the device is quit by interrupting the mains power with the external alarm reset switch S1 (see main-line wiring diagram). The reclosure preventing feature is unlocked and LEDs H1 or H2 go off again.

Connection of the electronic trigger MP 10

The electrical connection of MP 10 is to be completed according to the circuit diagram. The trigger is to be protected with a fuse (F) of **max. 4 A, slow-acting**. To guarantee the protection function, the electronic trigger is mounted as first element in the control power circuit.

Connections temperature monitoring:

- motor winding: terminals 1 - 2
- hot gas side: terminals 3 - 4



Terminals 1 - 6 on the electronic trigger MP 10 and terminals PTC 1 and PTC 2 on the compressor terminal board may not come into contact with mains voltage. This would destroy the electronic trigger and the PTC sensors.

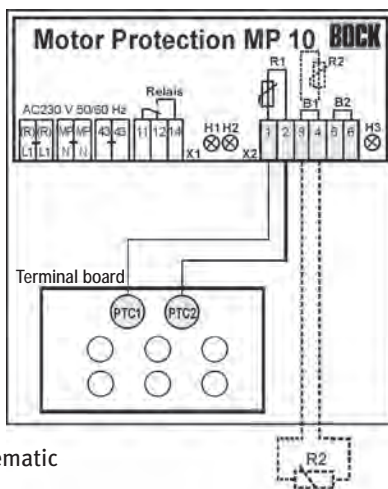


Fig.: schematic

Electrical system

Function test of the electronic trigger MP 10

Before starting up and after any faults or changes to the control power circuit of the machine, check the electronic trigger to ensure that it functions properly:

Pos	Procedure	LED H1 red	LED H2 red	LED H3 green
1	<ul style="list-style-type: none">● Interrupt the power supply (L1 or S1)● Disconnect the motor temperature sensor connection (terminal 1 or 2)● Disconnect the hot gas temperature sensor (if installed) (terminal 3 or 4)	OFF	OFF	OFF
2	<ul style="list-style-type: none">● Switch the power supply on again (L1 or S1).● Function check motor temperature sensor: stand-by● Function check hot gas temperature sensor: stand-by	ON	ON	ON
3	<ul style="list-style-type: none">● Interrupt mains voltage again (L1 or S1)● Connect terminals 1 or 2 respectively 3 or 4 again	OFF	OFF	OFF
4	<ul style="list-style-type: none">● Switch the power supply on again (L1 or S1):● MP 10 in stand-by mode	OFF	OFF	ON

The compressor and the motor protection unit MP10 are ready for use if the LED control lamps signal perfect operating functions.

Information for contactor and motor contactor selection

All protection equipment switching and monitoring devices must comply with the local safety regulations and established specifications (e.g. VDE) and regulations as well as the manufacturer's specifications. Use motor protector switch! Motor contactors, feed lines and fuses are to be rated according to the maximum operating current (see name plate). A max. 7 times the permissible operating current according to the compressor name plate is set as short circuit triggering current.

Start-up

Preparations for start-up

The compressor has undergone trials in the factory and all functions have been tested. There are therefore no special running-in instructions.
Check the compressor for any signs of transport damage!



To protect the compressor from intolerable operating conditions, high- and low-pressure pressostats.
Comply with the accident prevention regulations!

Pressure strength test

The compressor was tested in the factory for pressure strength. If the entire plant should be subjected in addition to a pressure strength test, then observe the following:

- Test the cold circuit according to EN 378-2 (or a corresponding safety standard).
- Perform the pressure strength test preferably with dry nitrogen (N₂).
- Do not mix any refrigerant with the testing medium (N₂), since otherwise shifting the ignition limit into the critical range is possible.



By no means the compressor may be pressure tested with oxygen or other industrial gases!

The maximum permissible operating pressure of the compressor may not be exceeded during the entire testing process (see name plate information)!

Tightness test

- Perform the tightness test of the refrigeration plant according to EN 378-2 (or a corresponding safety standard) **without inclusion of the compressor** (preferably dried with N₂).
- Do not add any refrigerant to the testing medium in case otherwise shifting the ignition limit into the critical range is possible.

Evacuation

- Firstly evacuate the plant, then include the compressor in the evacuation process.
 - Pressure relieve the compressor.
 - Open suction and pressure shutoff valve.
 - Evacuate with the vacuum pump on the suction and high pressure side.
 - Vacuum < 1,5 mbar with shutoff pump.
 - Repeat the process several times if necessary.



WARNING! Do not start the compressor in vacuum. Apply no voltage - also not for test purpose (may be operated only with refrigerant).

In the vacuum the spark-over and creepage current distances of the terminal board connection bolts shorten, this can lead to winding and terminal board damage.

Start-up

Filling with coolant



Wear personal safety gear!

- Check that the compressor suction and discharge shut-off valves are open.
- With the compressor switched off, fill the liquid coolant directly into the condenser or receiver, breaking the vacuum.
- If the coolant needs topping up after starting the compressor, it can be topped up in vapour from on the suction side, or, taking suitable precautions, also in liquid from at the inlet to the evaporator.



- **Avoid overfilling the machine with coolant.**
- **To avoid shifts in concentration, zeotropic coolant blends (e.g. R407C) must always only be filled into the refrigerating system in liquid form.**
- **Warning! Do not fill liquid coolant in the suction shut-off valve on the compressor.**
- **Do not mix additives with the oil and coolant.**

Start-up



Both shut-off valves - the suction and the discharge shut-off valve - must be opened before starting the compressor!

- Check that the safety and protection devices (pressure switch, motor protection, electrical contact protection measures etc.) are all functioning.
- Switch the compressor on.
- Check the oil level in the compressor. It should be visible in the sight glass.



If larger quantities of oil have to be topped up, there is a risk of oil liquid shocks. In this case, the oil return has to be checked.

- On reaching equilibrium (constant operating conditions), check that the system maintains the permitted operating conditions.
- When the whole system is running perfectly, we recommend drawing up a final protocol stating all important data and measured values.

Liquid sluggings



Liquid slugging can cause damage to the compressor and leakage of coolant.



To avoid liquid slugging, the following points should be observed:

- The whole plant must be properly designed.
 - All components must be rated to be compatible with each other with regard to output (particular evaporator and expansion valve).
 - Suction gas overheating at the compressor entrance should be min. 7 - 10 K (check setting of the expansion valve).
 - The machine must reach a state of equilibrium.
 - Particular in critical systems (e.g. several evaporator points), measures are recommended such as replacement of liquid traps, solenoid in the liquid line etc.
- Coolant should not move in the compressor when the machine is at a standstill.

GB

Start-up

Connection of oil level regulator

The connection "O" is provided for installing an oil level regulator. A corresponding adapter must be obtained from the trade.

Maintenance

Safety instructions



Before starting any work on the compressor:

- Switch the machine off and secure it against being switched back on.
- Relieve machine from the system pressure.

After maintenance has been performed:

- Connect safety switch.
- Evacuate compressor.
- **Cancel switch-on blockage.**



Avoid entry of air into the plant!

Ester oil behaves very strongly hygroscopically. The humidity bonded in the oil cannot be removed sufficiently by the evacuation process. Therefore very careful handling is required!

The compressor is to be kept in a clean, orderly condition by suitable care. In order to guarantee optimum operating safety and service life of the compressor, we recommend that you carry out the following servicing and checks at regular intervals:

- **Oil change** including cleaning the oil intake filter:
 - not mandatory in series machines produced in the factory
 - for field installation or operation in the application limit range, first oil change after approx. 100 - 200 operating hours, then approx. every 3 years or 10,000 - 12,000 operating hours.
 - Dispose of used oil properly, comply with national regulations.
- **Regular checks:** Tightness, running noise, pressures, temperatures, function of the additional equipment such as oil sump heating, pressure switches: annually. Observe national regulations.

Spare part recommendation

HG22P / ...	125-4 (S)	160-4 (S), 190-4 (S)
Designation	Art.-No.	Art.-No.
Valve plate kit	80305	80306
Seal kit	80313	
Oil pump kit	08324	
Oil sump heater kit, 110-240 V	08028	



Only use original Bock spare parts!

Maintenance

Accessories

Information to available accessories finds you in our product catalog as well as under www.bock.de.

Screwed unions



Various installation, maintenance and servicing work entails intervention in the compressor. **All work must therefore be performed with compliance with the given safety instructions. The screw starting torques are to be considered!**
Current table under www.bock.de.

Lubricants

The oil grade filled as standard in the factory is noted on the **name plate**. **This oil grade should be used preferably.** Alternatives to this are listed in the following excerpt from our lubricant table.

Bock series oil grades		Recommended alternatives
For HCFCs (e.g. R22)		
FUCHS Reniso SP 46	MOBIL SHC 425 SHELL Clavus SD 22-12	SUNOIL Suniso 4GS TEXACO Capella WF 46
For HFCs (e.g. R 134a, R404A, R407C)		
FUCHS Reniso Triton SE 55	FUCHS SEZ 32 ICI Emkarate RL 46 S	MOBIL Arctic AL 46 SHELL Clavus R 46

Information about further suitable oils on request.

Decommissioning



For major repairs or during shutdown: Observe safety instructions p. 18

Close shut-off valves at the compressor. Suction off refrigerant (do not blow off!) and dispose of it according to regulations. Open screw connections or flanges on the compressor valves and remove compressor, if necessary with lifting gear. If the compressor oil dispose correctly. Environmental regulations and national regulations consider!

Technical Data

Type	Cylinders	Swept volume 50 / 60 Hz (1450 / 1740 1/min)	Electrical Data ③				Weight	Connections ④		Oil filling	Sound pressure level L / M / H ⑤ dB(A)
			Voltage ①	Max. working current ② Δ / Y	Max. po- wer con- sumption ②	Starting current (rotore bloccato) Δ / Y		Discharge valve DV	Suction valve SV		
HG22P/125-4	2	m ³ /h	220-240 V Δ / 380-420 V Y - 3 - 50 Hz 265-290 V Δ / 440-480 V Y - 3 - 60 Hz	A	kW	A	kg	mm (inch)	mm (inch)	I	
		11,10 / 13,30		9,7 / 5,6	3,2	53 / 32	74				60 / 59 / 58
HG22P/125-4 S		11,10 / 13,30		10,9 / 6,3	3,7	53 / 32	74				
HG22P/160-4		13,70 / 16,40		10,5 / 6,0	3,5	53 / 32	74	16 ^(5/8)	22 ^(7/8)	1,1	61 / 60 / 59
HG22P/160-4 S		13,70 / 16,40		12,8 / 7,4	4,4	67 / 40	76				
HG22P/190-4		16,50 / 19,80		13,3 / 7,7	4,6	53 / 32	74				
HG22P/190-4 S		16,50 / 19,80		16,1 / 9,3	5,7	67 / 40	75				62 / 61 / 59

① Tolerance (± 10 %) applied to the average of the tension range.

Other voltages and current on request.

② Take account of the max. operating current / max. power consumption when designing contactors, leads and fuses. Switch: Service category AC3.

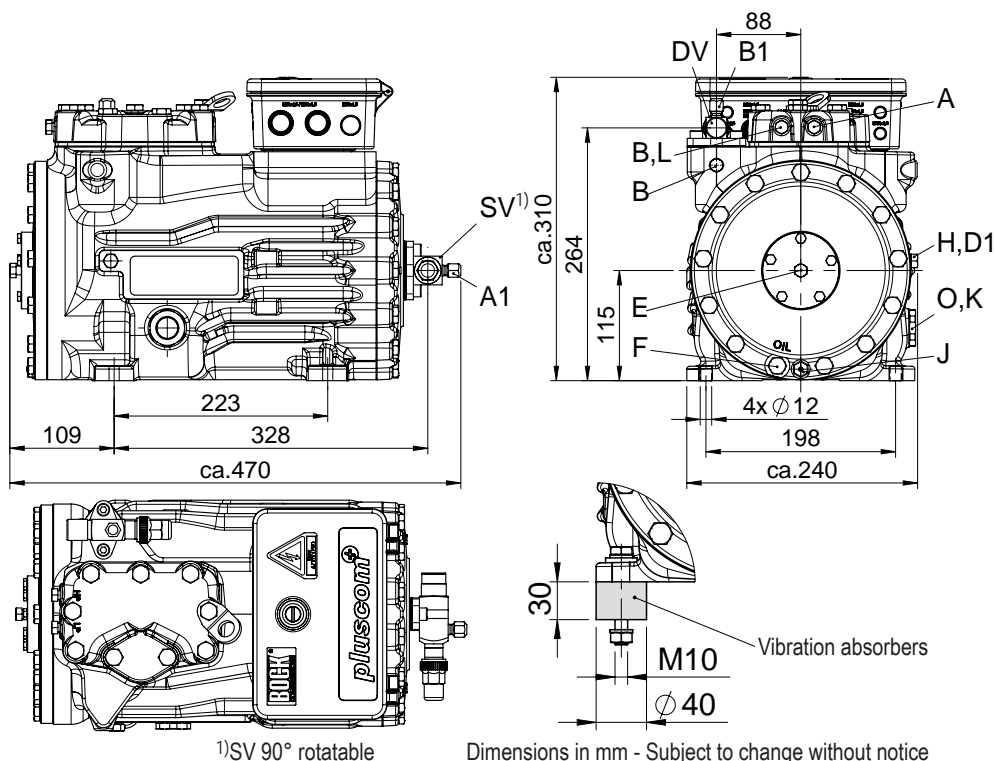
③ All data are based on the mean value of the voltage range.

④ For soldering joint.

⑤ L = settore temperatura bassa (-35 / 40°C), M = settore raffreddamento normale (-10 / 45°C), H = settore condizionamento d'aria.

Valeurs mesurées en une salle de mesure à faible réflexion. Les indications constituent des valeurs moyennes et se réfèrent à une distance de mesure de 1m, le compresseur fonctionnant à 50 Hz (1450tr/mn). Valeurs mesurées en réfrigérant R404A. Les indications sont des moyennes, tolérance ±2dB (A).

Dimensions and connections



SV	Suction line	Technical specifications, p. 20	
DV	Discharge line		
A	Connection suction side, not lockable		1/8" NPTF
A1	Connection suction side, lockable		7/16" UNF
B	Connection discharge side, not lockable		1/8" NPTF
B1	Connection discharge side, lockable		7/16" UNF
D1	Connection oil return from oil separator		1/4" NPTF
E	Connection oil pressure gauge		1/8" NPTF
F	Oil drain		M10
H	Oil filling bung		1/4" NPTF
J	Oil sump heater		Ø 15 mm
K	Sight glass		1 1/8" - 18 UNEF
L	Connection heat protection thermostat		1/8" NPTF
O	Connection oil level regulator		1 1/8" - 18 UNEF

GB

Conformity and manufacturer's declaration

DECLARATION OF CONFORMITY CE 96

for use of the compressors within the European Union
(as per EU low voltage directive 73/23/EEC, in the version 93/68/EEC)

We herewith declare that the hermetic refrigerating compressors named in the title comply with the low voltage directive 73/23/EEC in the version 93/68/EEC.

Applied harmonised standard

EN 60335-2-34

When installing our products in a machine,
the following manufacturer declaration must be taken into consideration.

MANUFACTURER DECLARATION

for use of the compressors within the European Union
(referring to the EU machinery directive 98/37/EEC, annex II B)

We herewith declare that the hermetic refrigerating compressors named in the title in the version supplied by us are intended for installation in a machine which complies with the machinery directive 98/37/EEC.

Applied harmonised standards

EN ISO 12100-1	EN 349	EN 60529
EN ISO 12100-2	EN 60204-1	


It is however not permitted to start up our products before the machine in which they are integrated has been tested according to the corresponding statutory regulations and declared to be conforming in all points.

PED CLASSIFICATION

(as per EU Pressure Equipment Directive 97/23/EEC)

The compressor is not subject to the EU Pressure Equipment Directive.

Frickenhausen, 07.05.2004


Dr. Harald Kaiser
Technical director



www.bock.de

Bock Kältemaschinen GmbH
Benzstraße 7
D-72636 Frickenhausen
Telefon +49 7022 9454-0
Telefax +49 7022 9454-137
mail@bock.de

QUALITY SYSTEM



certified by DQS according to
DIN EN ISO 9001 Reg. No. 2177



Art. Nr. 09637-11.08-DGbFEI
Subject to change without notice